

Occurrence of *Ohomopterus chugokuensis* (Coleoptera, Carabidae) in the Eastern Part of the Sanuki Hills in Northeastern Shikoku, Southwest Japan

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Abstract Taxonomic status of *Ohomopterus chugokuensis* is raised from a subspecies of *O. japonicus* to a full species based on genitalic characters and sympatry with *O. japonicus* on the Sanuki Hills in northeastern Shikoku. The Sanuki population of *O. chugokuensis* is described as a new subspecies under the subspecific name *mikianus*.

In one of his early works on the Japanese Carabidae, NAKANE (1961) described a lower taxon named *chugokuensis* as a subspecies of *Apotomopterus japonicus* (MOTSCHULSKY) (= *Ohomopterus japonicus* in the present sense; see IMURA, 2002). Though adopted genus has been variable according to the authors, its status as one of the geographical races of MOTSCHULSKY's species has been kept unchanged for more than forty years. Describing two new subspecies of *O. japonicus* in my previous paper (IMURA & MIZUSAWA, 1999), I illustrated two different types of endophallus of the same species, each corresponding to the group of *japonicus* in a strict sense and that of *chugokuensis*, respectively (*idem.*, p. 4, figs. 5–6). At that time, I noticed that the two groups were radically different in conformation of the endophallus, and might be regarded as two separate species. However, no definitive conclusion was drawn on this matter, since the distributional range of the *chugokuensis* group nowhere overlapped that of the *japonicus* group, and the two types of the endophallus might indicate the difference merely at the subspecies level. A conclusive proof on this problem has been obtained very recently.

In the early summer of 2003, a series of carabid specimens with general features agreeing with those of *O. japonicus* were collected by Masayoshi MIKI from the Sanuki Hills stretching along the borders of Kagawa and Tokushima Prefectures in northeastern Shikoku, Southwest Japan, and were submitted to me for identification. Examining the male genitalia by himself, MIKI was vaguely aware of the fact that there were two kinds of beetles in shape of the aedeagal apex in his series. A close examination made by myself proved that the specimens collected from the central part of the Sanuki Hills and those inhabiting the eastern part were apparently distinguishable not only in shape of the aedeagus but in conformation of the endophallus. The former was almost identical with subspp. *awajiensis* of the *japonicus* group described from the Is-

land of Awaji-shima, whereas the latter looked in all probability like a member belonging to the *chugokuensis* group. This was most unexpected, since the main distributional range of the latter group was the Chûgoku Hills of southwestern Honshu, and the range extended onto several adjacent islands on the Inland Sea of Setonai-kai at the most. At my request, MIKI made further investigations promptly and vigorously, and we have soon arrived at a rough estimation on the range of each group and the distributional borders between them. Finally on July 26, he found two places where the beetles with the genitalia of the *japonicus* type and those of the *chugokuensis* type occur sympatrically.

Taking the above findings into account, I am going to raise the taxonomic rank of *chugokuensis* to a full species in this paper, and to describe the Sanuki population as a new subspecies. In the same paper are given the records of *O. japonicus* collected from the neighboring areas and the findings of presumable natural hybrids between *O. chugokuensis* and *O. japonicus*.

Before going further, I wish to express my deep appreciation to Mr. Masayoshi MIKI (Aizumi-chô of Tokushima Prefecture), without whose enthusiastic survey and careful observation, this work could never have been accomplished. Also I thank Mr. Kiyoyuki MIZUSAWA for kindly allowing me to examine the specimens in his collection. Heartly thanks are due to Dr. Shun-Ichi UENO (National Science Museum, Tokyo) for reading the manuscript of this paper.

***Ohomopterus chugokuensis* (NAKANE, 1961), stat. nov.**

[Japanese name: Aki-osamushi]

Apotomopterus japonicus chugokuensis NAKANE, 1961, *Fragm. coleopterol.*, Kyoto, (1), p. 1; type locality: Mt. Takashiro [sic.] (=misreading of Mt. Takajô-san, Shimane Pref., Honshu (depository of the type specimen: Hokkaido University Museum, Sapporo); 1962, *Ins. Japon.*, Tokyo, **2**(3), p. 35; 1963, *Icon. Ins. Japon. Col. nat. ed.*, Tokyo, **2** [Coleoptera], p. 11. — ISHIKAWA, 1969, *Bull. natn. Sci. Mus.*, Tokyo, **12**, p. 523. — KOMIYA, 1971, *Ins. Mag.*, Tokyo, (76) [1970], p. 53.

Ohomopterus japonicus chugokuensis: Kinki Research Group of Carabid Beetles, 1979, *Spec. Publ. Osaka Mus. nat. Hist.*, Osaka, p. 31.

Carabus (Ohomopterus) japonicus chugokuensis: ISHIKAWA, 1985, *Coleopt. Japan Col.*, Osaka, **2**, p. 23. — IMURA & MIZUSAWA, 1996, *Carabus of the World*, Tokyo, p. 107.

Though described as a subspecies of *O. japonicus*, the present lower taxon should be regarded as an independent species, since it is sympatric with *O. japonicus* at least at two places on the Sanuki Hills, the details of which will be described on later pages.

Morphologically, these two species are discriminated from each other most aptly by the endophallic structure of the male genitalia as shown in Figs. 1–4 and the following key:

- 1 (2) Left basal lateral lobe with the shape like a chicken wing tip, without any accessory protrusion at ventral side; podian lobe less strongly protruded bilaterally; terminal plates on both sides of aggonoporus very short and wider than long. *O. chugokuensis*.

- 2 (1) Left basal lateral lobe dome-like in shape, with an accessory protrusion at ventral side; podian lobe strongly protruded bilaterally; terminal plates on both sides of aggonoporus elongate and longer than wide . . . *O. japonicus*.

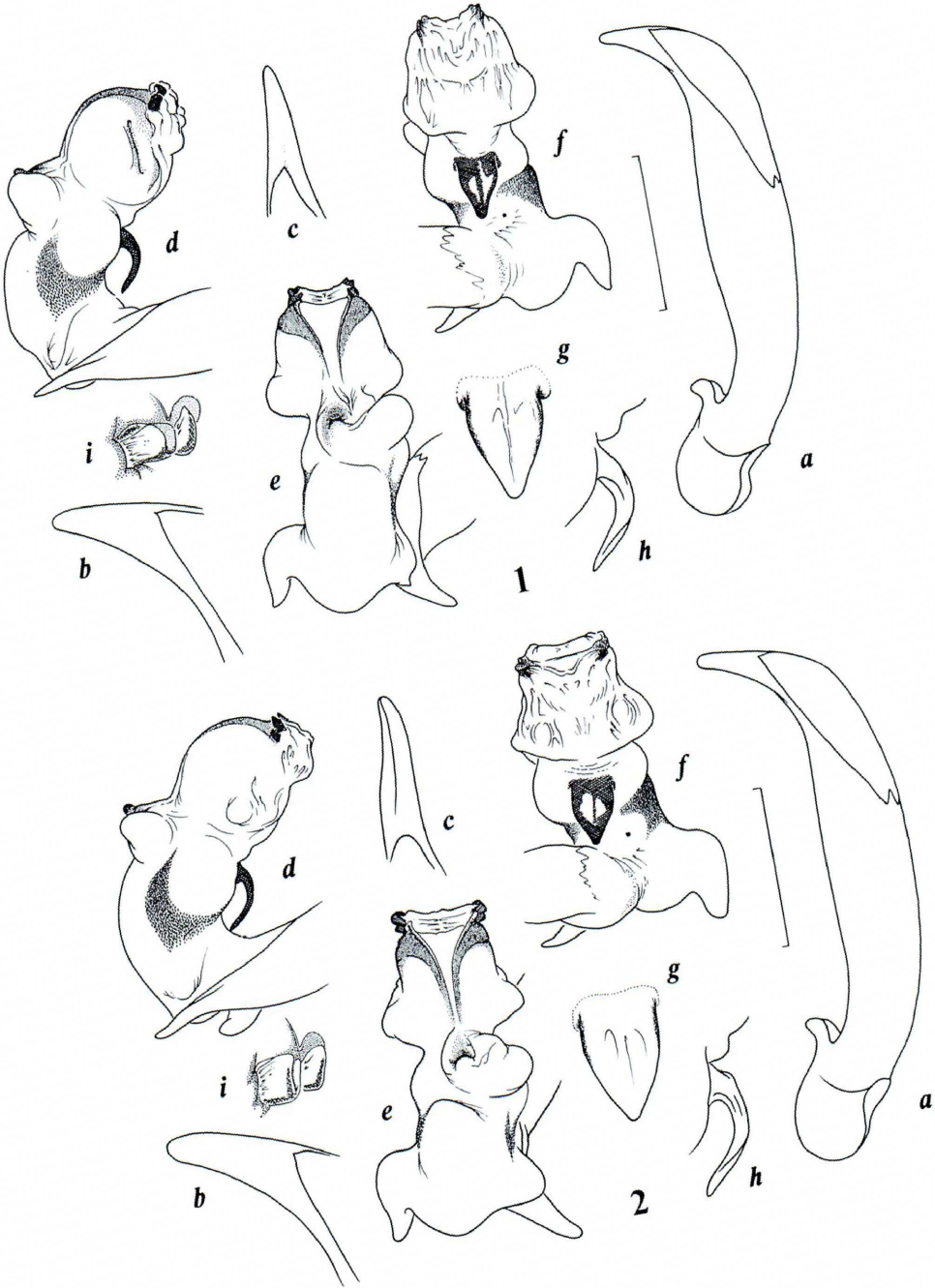
In *O. chugokuensis*, the gonocoxite is slenderer, more strongly concave above and scattered with a smaller number of dimples on the dorsal surface, whereas it is wider, less strongly concave above and scattered with many dimples on the dorsal surface in *O. japonicus*. A difference is also found in size and shape of the ligular apophysis; it is a little larger and wider in *O. chugokuensis* but relatively smaller and narrower in *O. japonicus* when compared between the same-sized individuals (Figs. 5–6). However, such differences in the female genitalia are often uncertain, and they cannot be always useful for a correct determination.

Subspecific classification. Of the total fifteen taxa hitherto recognized as the subspecies of *O. japonicus* (MOTSCHULSKY, 1858; BREUNING, 1932; NAKANE, 1961, '68; IMURA, DEJIMA & MIZUSAWA, 1993; IMURA & MIZUSAWA, 1994, '99), at least three, all having the genitalic features of the *chugokuensis* type, should be transferred to the present species. *Ohomopterus chugokuensis* is thus classified into the following four subspecies:

- 1) subsp. *chugokuensis* NAKANE, 1961
Range: greater part of the Chûgoku District and the west-central part of the Kinki District, partly reaching the southwestern tip of the Hokuriku District (Fukui Prefecture).
- 2) subsp. *umekii* IMURA et MIZUSAWA, 1999
Range: southeastern part of Yamaguchi Prefecture (Yanai-shi, Iwakuni-shi, Is. Yashiro-jima of the Bôyo Islands, etc.) to the southern part of Hiroshima Prefecture (Is. Kami-kamagari-jima of the Geiyo Islands).
- 3) subsp. *mochizukii* IMURA et MIZUSAWA, 1994
Range: Is. Ôshima of the Geiyo Islands in Ehime Prefecture.
- 4) subsp. *seizaburoi* IMURA, DEJIMA et MIZUSAWA, 1993
Range: Is. Shôdo-shima in Kagawa Prefecture.

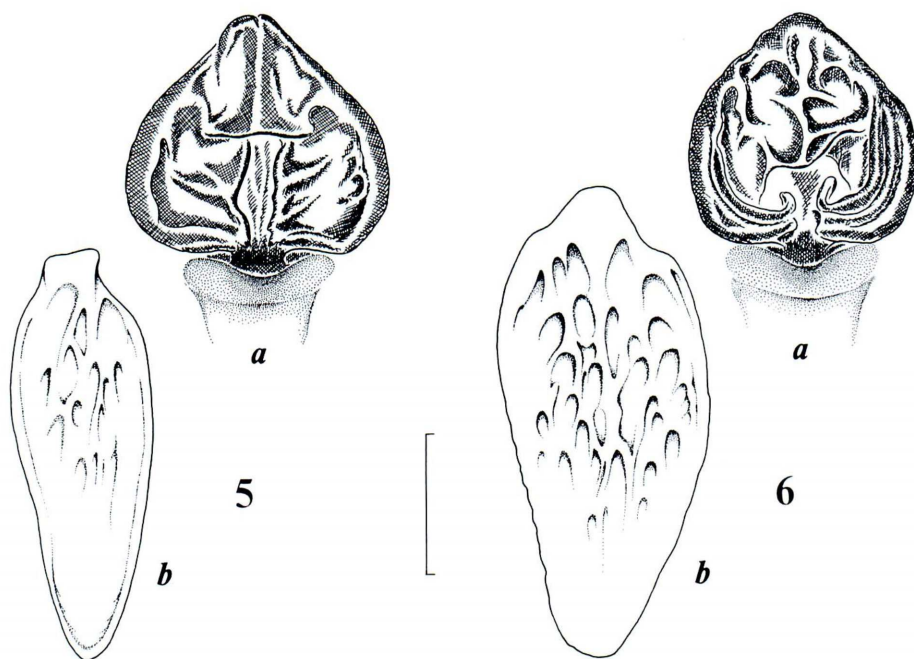
Figs. 1–2 (on p. 450). Male genital organ of *Ohomopterus chugokuensis* subsp. — 1, *O. c. chugokuensis* (from Mt. Takajô-san of Misumi-chô, Shimane Pref.); 2, *O. c. mikianus* (from Ôyama-hata of Kamiita-chô, Tokushima Pref.). — a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporus in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.

Figs. 3–4 (on p. 451). Male genital organ of *Ohomopterus japonicus* subsp. — 3, *O. j. japonicus* (or subsp. *corvinus* MOTSCHULSKY, more strictly) (from Mt. Hiko-san of Nagasaki-shi, Nagasaki Pref.); 4, *O. j. awajiensis* (from the Pass Kusaka-tôgê of Sanuki-shi, Kagawa Pref.). — a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporus in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.



Ohomopterus chugokuensis from the Sanuki Hills





Figs. 5-6. Female genital organ of *Ohomopterus* spp. — 5, *O. chugokuensis mikianus* (from Ôyama-hata of Kamiita-chô, Tokushima Pref.); 6, *O. japonicus awajiensis* (from the Pass Kusaka-tôgê of Sanuki-shi, Kagawa Pref.). — a, Inner plate of ligular apophysis in dorsal view; b, left gonocoxite in dorsal view. Scale: 0.5 mm.

In addition to the above four, the fifth one will be described in the following lines.

***Ohomopterus chugokuensis mikianus* IMURA, subsp. nov.**

[Japanese name: Sanuki-aki-osamushi]
(Figs. 2 & 5)

Length: 18.7–22.2 mm (including mandibles). Upper surface of body brownish coppery sometimes with a faint greenish tinge along lateral margins, or black with a weak blue-greenish lustre along lateral margins. Tibiae dark reddish brown except for distal parts which are dark brown. In a male specimen collected from the northeastern side of the Pass Ôsaka-tôgê, upper surface is coppery with brighter greenish tinge, and tibiae and tarsi are entirely black.

Allied to the nominotypical *chugokuensis*, but distinguishable from that race in the following respects: 1) size a little smaller on an average; 2) lateral sides of pronotum more strongly convergent towards front angles which are more obtusely rounded; 3) pronotal disc usually more strongly convex above; 4) striae between elytral intervals narrower and more deeply guttered, with the surface less prominently punctured.; 5) tertiary intervals adjoining outside the 3rd, or outermost, primary intervals smoother,

at most very weakly notched near the basal and apical parts of elytra; 6) apical lobe of aedeagus a little longer and less acutely narrowed towards the tip in lateral view.

From subsp. *umekii*, the new race is discriminated by different coloration, evidently smaller body size and differently shaped aedeagal apex. Also differs from subsp. *mochizukii* in less strongly protruded hind angles of the pronotum and much robust aedeagal apex. Readily distinguishable from subsp. *seizaburoi* of Is. Shôdoshima in the number of the setae on the metacoxa (it is trisetose in *seizaburoi*, which is the character state quite exceptional for the species, whereas it is bisetose in all the other subspecies of *O. chugokuensis* including *mikianus*) and less roundly arcuate dorsal margin of the aedeagal apex.

Type series. Holotype: ♂, Ôyamahata [大山畑], 400 m in alt., Kan-yaké [神宅] of Kamiita-chô in Itano-gun, Tokushima Pref., 25-VI-2003, M. MIKI leg., preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 50♂♂, 97♀♀, same collecting data as for the holotype; 2♂♂, 3♀♀, Pass Ôyama-goé [大山越], 500 m in alt., between Kamiita-chô of Tokushima Pref. and Higashi-kagawa-shi (=former Shirotori-chô in Ôkawa-gun) of Kagawa Pref., 22-VI-2003; 3♂♂, 1♀, Pass Utatsu-goé [卯辰越], 250 m in alt., Orino [折野] of Kitanada-chô in Naruto-shi, Tokushima Pref., 28-VIII-2003; 9♂♂, 10♀♀, ESE of the Pass Ôsaka-goé [大坂越], 750 m in alt., Ôsaka [大坂] of Itano-chô in Itano-gun, 25-VI-2003; 1♀, N of the Pass Uno-tao [鵜涛], 380 m in alt., in Higashi-kagawa-shi, 25-V-2001; 5♂♂, 5♀♀, Kurokawa-onsen Spa [黒川温泉], 120 m in alt., Nyûnoyama [入野山] of Higashi-kagawa-shi, 28-VIII-2003; 10♂♂, 12♀♀, above Iwano [岩野], 180 m in alt., on the eastern bank of the Higaidani-gawa River [日開谷川], of Ichiba-chô in Awa-gun, Tokushima Pref., 25-VIII-2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

Further specimens examined. 8♂♂, NE of the Pass Ôsaka-tôgê [大坂峠], 280 m in alt., of Gomyô [五名] in Higashi-kagawa-shi, Kagawa Pref., 25-VI-2003; 10♂♂, same locality, 26-VII-2003; 4♂♂ (collected with *O. japonicus awajiensis*), SW of the Pass Ôsaka-tôgê, 280 m in alt., 26-VII-2003; 1♂ (collected with *O. j. awajiensis*), between Ônara [大瀬] and Gomyô elementary school, ca. 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26-VII-2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

All the above specimens are excluded from the type series even though bearing the features consistent with the present new subspecies, in order to avoid risk of genetic contamination by *O. japonicus awajiensis*. All the females from the same places are excluded even from the examined specimens because of uncertainty of the morphological identification.

Colour variation. Dorsal surface is coppery in all the specimens from the Utatsu-goé, Ôsaka-goé, Ôyama-goé and Uno-tao, whereas the black individuals appear in the following localities (ratio of the black form is shown in parentheses): Ôyamahata (3.4%), Iwano (13.6%), northeastern side of the Ôsaka-tôgê (30.8%) and Kurokawa-onsen (70.0%). Thus, the black form is much more frequent in the western

part of the distributional range, where the new race is parapatric with *O. japonicus*.

Distribution. Narrowly localized on the hilly area in the eastern part of the Sanuki Hills in northeastern Shikoku, Southwest Japan, usually above the altitude of 100 m. Its range is defined by the Yoshino-gawa alluvion in the south and the depression formed by the Minato-gawa and Oumi-gawa Rivers in the north. The southwestern margin seems to be bordered by the Higaidani-gawa River, a northern tributary of the Yoshino-gawa, on the western bank of which is found *O. japonicus awajiensis*. The easternmost locality so far known is the Pass Utatsu-goé on the southwestern slope of Mt. Ôasa-yama. The range partly overlaps that of *O. japonicus awajiensis* on the southwestern side of the Pass Ôsaka-tôgé.

***Ohomopterus japonicus awajiensis* (IMURA, DEJIMA et MIZUSAWA, 1993)**

[Japanese name: Awaji-hime-osamushi]

(Figs. 4 & 6)

Carabus (Ohomopterus) japonicus awajiensis IMURA, DEJIMA et MIZUSAWA, 1993, Gekkan-Mushi, Tokyo, (264), pp. 14, 16, fig. 32, pl. 1, figs. 19–20.

The present subspecies was originally described from the Island of Awaji-shima, off the northeastern coast of the Island of Shikoku. Its endophallus is of the *japonicus* type, and the subspecies is evidently classified into *O. japonicus*. This race is characterized by having longer antennae, uniquely shaped elytra and narrowly elongate aedeagal apex, etc. Terminal plates on both sides of the aggonoporus are much shorter than those of the nominotypical subspecies as shown in Figs. 3–4.

Though somewhat different in the details, *O. japonicus* inhabiting northeastern Shikoku seems to agree in the morphological characters with the Awaji-shima race, at least concerning those collected from the areas neighboring the distributional range of *O. chugokuensis mikianus*. They are therefore recorded under the name of subsp. *awajiensis*.

Specimens examined. 5♂♂, 7♀♀, NNE of the Pass Kusaka-tôgé [日下峠], 270 m in alt., Fusogi [不掬] of Ôkawamachi-tazura [大川町田面] in Sanuki-shi, Kagawa Pref., 25–VI–2003; 19♂♂, 25♀♀, Suzutaké [鈴竹], ca. 1,000 m distant to north from the Pass Ôsaka-tôgé, 200 m in alt., of Gomyô in Higashi-kagawa-shi, Kagawa Pref., 26–VII–2003; 12♂♂, 25♀♀, ca. 900 m distant to west from the Pass Ôsaka-tôgé, 280 m in alt., 26–VII–2003; 67♂♂+ca. 100♀♀ (collected with *O. chugokuensis mikianus*), SW of the Pass Ôsaka-tôgé, 280 m in alt., 25–VI–2003; 13♂♂+ca. 30♀♀ (collected with *O. c. mikianus*), between Ônara and Gomyô elementary school, 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; 22♂♂, 21♀♀, above Gomyô crematory, in the upper course of the Miya-gawa [宮川] River, 300 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; 1♂, 7♀♀, between Haraigawa [払川] of Higashi-kagawa-shi and Ôkubo-ji Temple [大窪寺] of Sanuki-shi, 350 m in alt., 25–VI–2003; 1♂, near the summit of Mt. Nyotai-san [女体山], 720 m in alt., on the borders of Higashi-kagawa-shi and Sanuki-shi, 25–VI–2003; 6♂♂, 29♀♀, above Heiji [平地], 120 m in alt., Inu-no-

haka [犬墓] of Ichiba-chô in Awa-gun, Tokushima Pref., 25–VIII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

**Natural Hybrid between *Ohomopterus chugokuensis mikianus*
and *O. japonicus awajiensis***

(Fig. 7)

Three strange specimens with the male genitalic features intermediate between those of *O. chugokuensis mikianus* and *O. japonicus awajiensis* have been obtained from the two places where the two species occur sympatrically. In many respects, they are considered to be the interspecific hybrid, and here I show an illustration of the male genitalia of one of the three. In this example (teneral, 21.5 mm in the length including the mandibles, with the coloration of the upper surface black bearing a faint blue-greenish tinge on the head and pronotum), the aedeagal apex and the digitulus are intermediate in the shape between the two species, the left basal lateral lobe of the en-

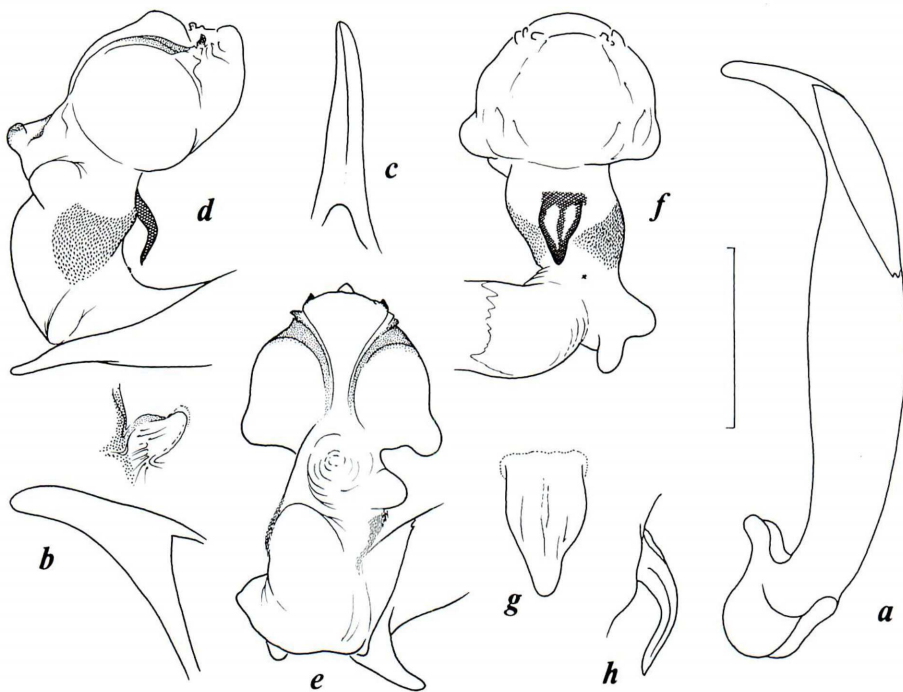


Fig. 7. Male genital organ of presumable natural hybrid between *Ohomopterus chugokuensis mikianus* and *O. japonicus awajiensis* (from between Ônara and Gomyô elementary school of Higashi-kagawashi, Kagawa Pref.). — a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporus in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.

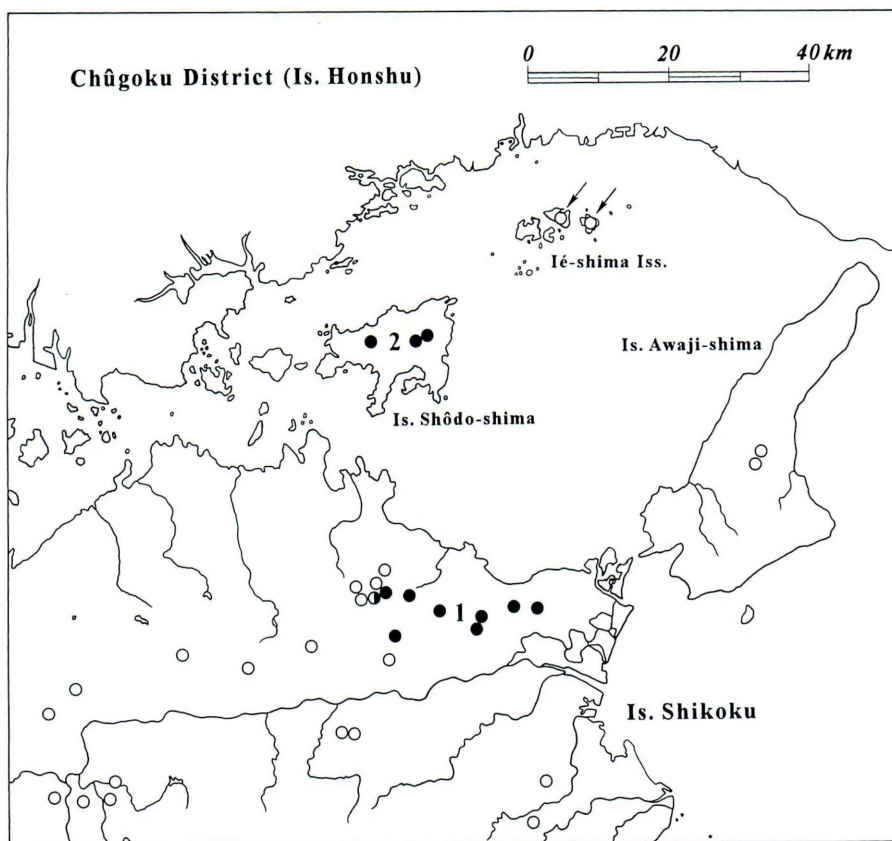


Fig. 8. Map showing the distribution of the two species belonging to the *japonicus* species-group of *Ohomopterus* in northeastern Shikoku and the neighboring islands in Southwest Japan. Closed circle: *O. chugokuensis* (1, subsp. *mikianus*; 2, subsp. *seizaburoi*). Open circle: *O. japonicus* (identifiable with subsp. *awajiensis*). Hemi-closed circle: the place where both the species occur sympatrically (two collecting sites are included in a plot). The nominotypical *chugokuensis* is known from the Chûgoku District, though not recorded from the alluvial plain and low hills facing the Inland Sea of Setonai-kai within the range shown on this map. Plots of *O. japonicus* partly contain those recorded by previous authors (Kinki Research Group of Carabid Beetles, 1979; TOMINAGA, 1982; MIKI, 2003, pers. comm.).

dophallus is of the *japonicus* type though much smaller in the size, and the terminal plates on both sides of the aggonoporus are vestigial, lacking sclerotization of the basal parts. Apical portion of the endophallus is monstrously inflated, but it is uncertain whether this deformity is resulted from hybridization or caused by applying a strong pressure into the endophallus of the immature specimen.

Specimens examined. 2♂♂, SW of the Pass Ôsaka-tôgê, 280 m in alt., of Gomyô in Higashi-kagawa-shi, Kagawa Pref., 26–VII–2003; 1♂ (the specimen described above and illustrated in Fig. 7), between Ônara and Gomyô elementary school,

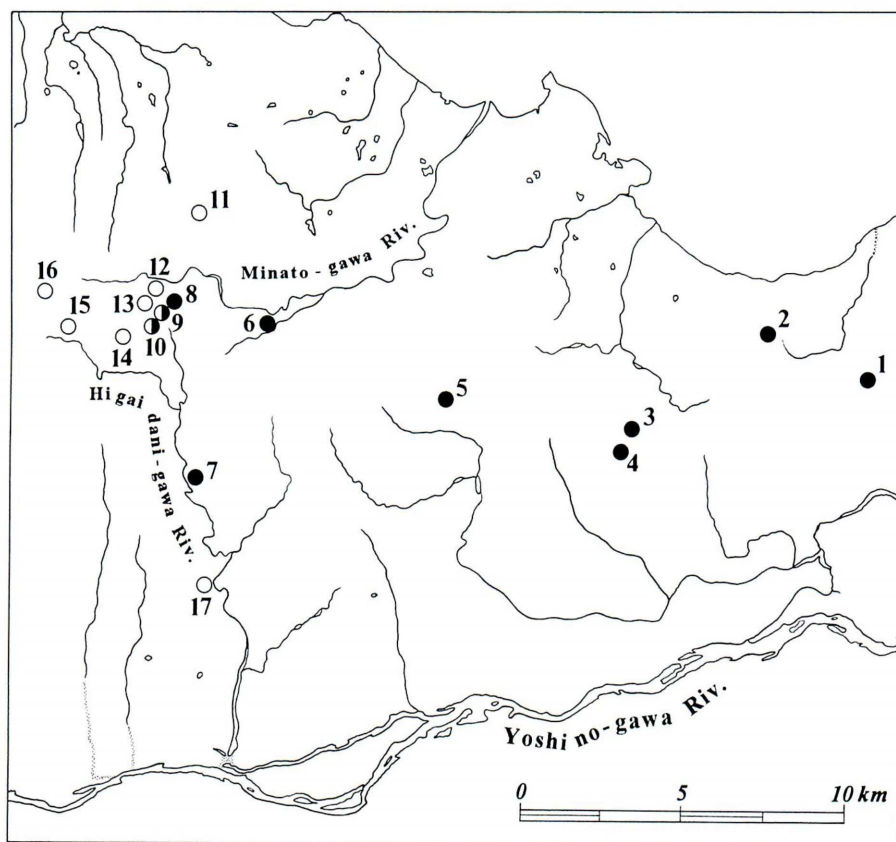


Fig. 9. Localities of *Ohomopterus chugokuensis mikianus* (1–10) and *O. japonicus awajiensis* (9–17) in the eastern part of the Sanuki Hills, superimposed on the south-central portion of Fig. 8. Closed circle: *O. c. mikianus*. Open circle: *O. j. awajiensis*. Hemi-closed circle: the place where both the species occur sympatrically. 1, Pass Utatsu-goé; 2, Pass Ôsaka-goé; 3, Pass Ôyama-goé; 4, Ôyamahata; 5, Pass Uno-tao; 6, Kurokawa-onsen Spa; 7, Iwano; 8, NE of Pass Ôsaka-tôgê; 9, SW of Pass Ôsaka-tôgê; 10, Ônara–Gomyô elementary school; 11, Pass Kusaka-tôgê; 12, Suzutaké; 13, W of Pass Ôsaka-tôgê; 14, Gomyô crematory; 15, Haraigawa–Ôkubo-ji; 16, Mt. Nyotai-san; 17, Heiji.

ca. 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

Discussion

The discovery of the present new population is very important from several points of view.

In the first place, we have obtained an undeniable evidence to corroborate the specific independency of *Ohomopterus chugokuensis*, since it coexists with *O. japonicus*

at least at two stations on the Sanuki Hills. Though strikingly resembling each other in the external features, these two species are sharply discriminated in conformation of the endophallus of the male genitalia.

Distributional ranges of the two species partly overlap in the southwestern side of the Pass Ôsaka-tôgê located near the uppermost courses of the Higaidani-gawa and Minato-gawa Rivers, from where three examples of presumable interspecific hybrid have been obtained. Of the total 73 male specimens from the southwestern side of the same pass, 67 were identified with *O. japonicus*, 4 were *O. chugokuensis* and the remaining 2 were assigned to the hybrid. Of the 15 males collected from between Ônara and Gomyô elementary school, 13 were *O. japonicus*, 1 was *O. chugokuensis* and 1 was considered to be the hybrid. Though all the female specimens were not taken into account because of the uncertainty of morphological identification, *O. japonicus* is evidently predominant over *O. chugokuensis* at these two collecting sites, and the hybridized individuals, if any, seem to be seldom produced. It seems certain that the two species occurring on the Sanuki Hills are distributed parapatrically in principle. At least we can be sure that the so-called intergrading or hybrid zone is nowhere recognizable in the intervening area of the two species. It is true that *O. chugokuensis* occasionally penetrates into the territory of *O. japonicus* at the spots where the ranges of the two species adjoin each other, but the former is never fused into the latter. This fact suggests that they have reached a high degree of completeness in the reproductive isolation despite a close similarity in the external features.

The discovery is also important from the zoogeographical viewpoint. Until carefully surveyed by MIKI, our knowledge was rather insufficient on the *japonicus* species-group of the Sanuki Hills, and only *O. japonicus* was sporadically recorded from the east-central to the western part. The species is also known from the central part of the Island of Awaji-shima off the northeastern coast of Shikoku. Though separated by the Naruto Straits now, the central hills of Awaji-shima can be regarded as the northeastern extension of the Sanuki Hills. This view is supported by the fact that the populations of *O. japonicus* from these two regions are morphologically quite similar, and could be assigned to a single subspecies, *awajiensis*. Before the discovery of *O. chugokuensis mikianus*, we naturally considered that the whole range of the Sanuki Hills might be included in the territory of *O. japonicus*. It was therefore most unexpected that the beetles obviously referable to *O. chugokuensis* did occur in the eastern part of the same hills as if it were sandwiched between the two separate ranges of *O. japonicus*. To give a convincing explanation for such an unusual distribution, it might be necessary to examine a possibility of an artificial introduction. However, it is highly implausible that the population of *O. chugokuensis* occurring on the Sanuki Hills was recently introduced from somewhere else, since the known range of the new subspecies is considerably wide, attaining to a distance over 22 km from east to west, and a high population density is maintained in every collecting site.

The nominotypical *chugokuensis* is known from the Chûgoku Hills of the Chûgoku District in southwestern Honshu. However, it has not been recorded from the

alluvial plain and the low hills at the southern part of Okayama Prefecture facing the Setonai-kai, so far as I know. The population inhabiting the Island of Shôdo-shima, which is located between southeastern Chûgoku District and northeastern Shikoku, belongs to an endemic subspecies named *seizaburoi*. According to Kiyoyuki MIZUSAWA (pers. comm.), another population of the *japonicus* species-group also occurs on the two small islands named Ié-shima and Tanga-shima belonging to the Ié-shima Islands off the southwestern coast of Hyôgo Prefecture, though not properly recorded as yet. I was able to examine the Ié-shima specimens now preserved in the MIZUSAWA collection, and realized from the endophallic morphology that they belong to the group of *japonicus*, showing a close similarity to subsp. *awajiensis*. As shown in Fig. 8, distribution of the two species is thus complicated in northeastern Shikoku and the neighboring islands, and does not seem to correlate with the present topography. It is difficult to elucidate at present why and how such a discrete distribution was established in the easternmost part of the Inland Sea of Setonai-kai, but the discovery of the present new subspecies poses an interesting problem to the relationship between the geohistorical background and the process of dispersal of the *japonicus* species-group.

要 約

井村有希：讃岐山脈東部におけるアキオサムシの発見。—— 徳島県の三木將義氏によってごく最近、讃岐山脈の東部から、下位分類単位 *chugokuensis* (アキオサムシ) の特徴に一致する交尾器形態をそなえたヒメオサムシ種群の集団が発見された。本単位はじゅうらい、ヒメオサムシ *Ohomopterus japonicus* の1亜種とみなされてきたが、♂交尾器内袋の基本形態が異なるうえ、讃岐山脈の一角において *japonicus* 型の集団と同所的に生息していることから、ヒメオサムシとは異なる種に分類するべきであろう。本論文ではまず、アキオサムシを独立種 *Ohomopterus chugokuensis* へと昇格し、その下にこれまでヒメオサムシの亜種とされてきた3亜種 (*umekii*, *mochizukii*, *seizaburoi*) を編入したうえで、讃岐山脈の集団にはサヌキアキオサムシ *mikianus* という新亜種名を与えて記載した。同山脈東部において、ヒメオサムシとアキオサムシは日開谷川と湊川を分布境界線としてほぼ側所的にすみ分けているようで、両河川の上流部が出会う香川県東かがわ市五名の大坂峠南西部には両種の混生地があり、同所では交雑によって生じたと思われる個体が得られている。アキオサムシの分布圏はこれまで、中国地方からせいぜい瀬戸内の島嶼の一部までと考えられてきたので、瀬戸内海を越えて四国の一部から発見されたことは驚嘆に値しよう。いっけん不自然にみえるその分布状況から、人為的に移入されたものが定着している可能性も考慮しなければならないが、これまでに確認されたサヌキアキオサムシの生息範囲は東西22 km以上に及んでいるうえ、いずれの地においてもひじょうに高い個体密度が維持されていることから、自然分布とみなすほうが妥当であろう。本新亜種の発見により、瀬戸内海東部地域におけるヒメオサムシ種群の分布が、予想以上に複雑なものであることが浮き彫りになり、生物地理学的にもきわめて興味深い問題が提起されたことになる。

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